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Photoinduced toxicity of PrF3 and LaF3 nanoparticles

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Abstract

© 2016, Pleiades Publishing, Ltd.PrF3 and LaF3 nanoparticles were synthesized by the hydrothermal method. The size distribution of these nanoparticles in the colloidal solution produced was studied by photon correlation spectroscopy. The mean diameter of the nanoparticles was 42 ± 1 nm. During the study of the toxicity of the nanoparticles, the mixture of a colloidal solution of the nanoparticles with cells to be studied was irradiated by 30-mW continuous lasers at wavelengths of 532 and 473 nm. The concentration of salmonella cells in normal saline was 106 cell/mL, while that of nanoparticles was 0.1 g/L. The cell survival percentage was 39, 34, and 20% for the irradiation times of 5, 10, and 15 min, respectively, at an optimal laser radiation power density of 0.4 W/cm at a wavelength of 532 nm. It was ascertained that LaF3 nanoparticles do not possess the property of photoinduced toxicity and the apoptosing effect. Moreover, the property of photoinduced toxicity is not shared by microparticles, in contrast to nanoparticles.

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